Geologic Site of the Month

March, 2013

Beaches at Fort Foster Park, Kittery, Maine

43° 04’ 14.16” N, 70° 41’ 12.00” W

Text by
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Introduction

Fort Foster Park is a very popular town park where the Piscataqua River enters the Gulf of Maine. This is the most southern point on the Maine mainland and has a view across the river to New Hampshire. The park has remnants of a fort, hills with ocean overlooks, a playground, a long pier, and several sandy pocket beaches. Fort Foster should not be confused with the nearby Fort McClary just upriver to the north in Pepperrell Cove (Dickson, 2000). Fort Foster Park is a good place to explore geology while on an outing.

Photo by S. M. Dickson

Figure 1. Fort Foster Park in Kittery. Maine.

Bedrock Geology

A portion of the bedrock geologic map of the Kittery quadrangle (Hussey, 2012). The rocks at Fort Foster Park include schist and gneiss, metamorphic rocks of the Rye Complex (units **OZr** and **OZra**), and an ancient mylonite (unit **um**) related to the Great Common fault. For a complete explanation, see the full map (Hussey, 2012).

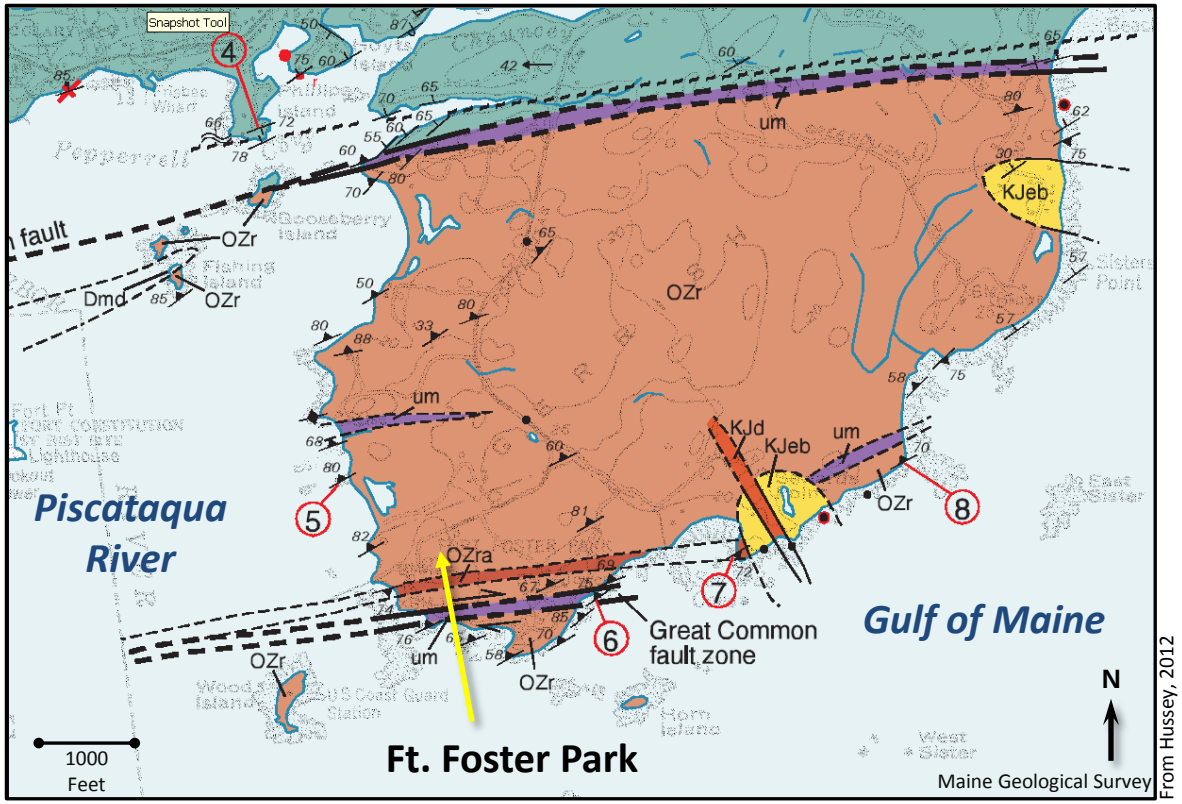

Figure 2. The bedrock of Fort Foster Park and Wood Island just offshore is primarily metamorphic rock of Precambrian-Ordovician(?) age and part of the Rye Complex.

Bedrock Geology and Faults

The park has bands of resistant metamorphic rocks. One of these rises higher than the beach (above) and is shown as **OZra** in Figure 2. These faults are no longer active or a threat of earthquakes but you may find evidence of different rock types on either side of the fault in in the park. For more about these rocks see Berry (2007) .

Photo by S. M. Dickson

Figure 3. The east-west contacts between the rocks are part of an ancient strike-slip fault system (Swanson, 1988; 1989; 1992; 2007).

Surficial Geology

Above the bedrock are late-glacial and post-glacial deposits of sediment.

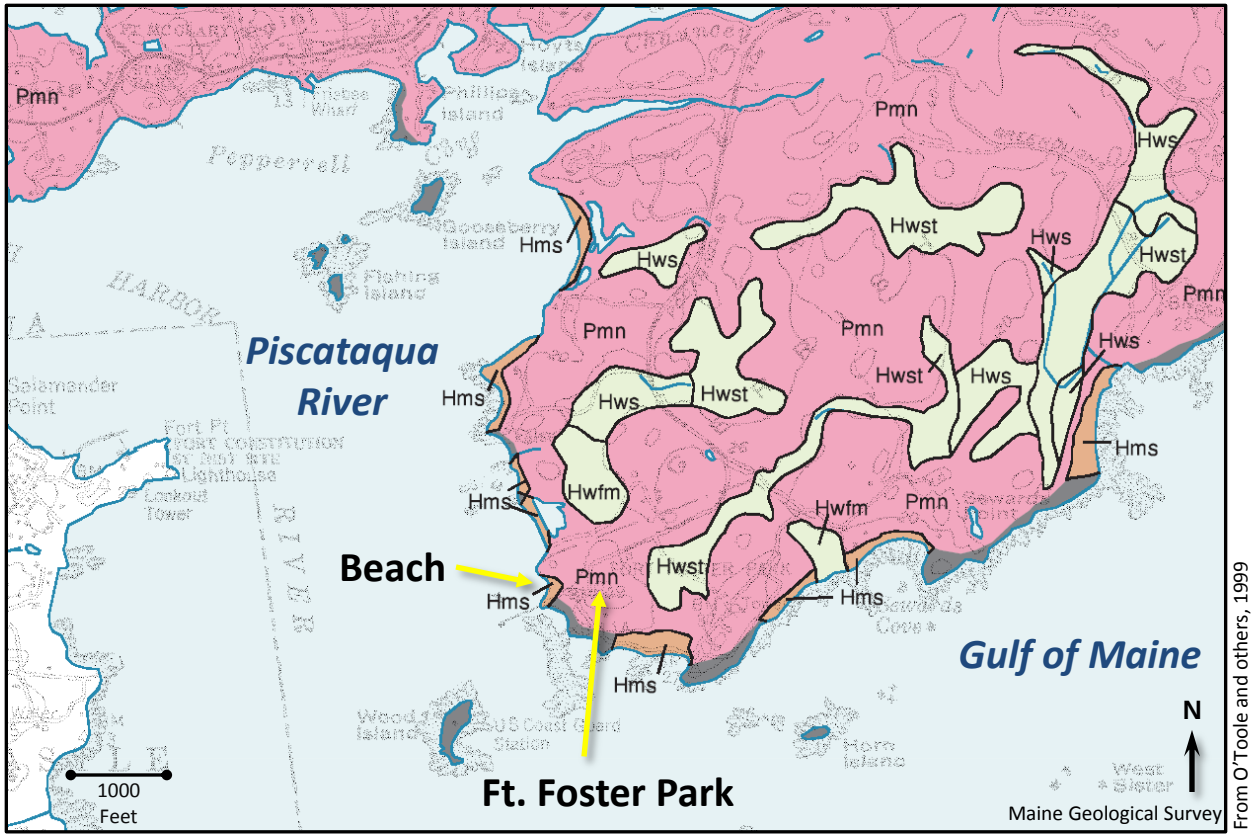

Figure 4. Pleistocene marine nearshore deposits (**Pmn**) are dominant in the park. At the end of the last Ice Age Kittery was below sea level and marine sediments were deposited over the bedrock. Subsequently Holocene marine sand (**Hms**) formed beaches and barrier dune complexes along the shoreline through wind and wave action. Wetlands are shown by the map units beginning with **Hw**. This figure is a portion of the surficial geologic map of the Kittery Quadrangle by O'Toole and others, (1999).

Coastal Geology – Beaches

Pocket beaches border Fort Foster Park along the waterfront. Along the high-tide line are pebbles and cobbles rounded by wave action. Very fine sand is throughout the beach that is very wide at low tide but mostly submerged at high tide.

Photos by S. M. Dickson

Figure 5. A cobble ramp forms the seaward edge of a mixed sand and gravel frontal dune (left). A long pier extends from the park out to the Piscataqua River (right). A fine sand beach has a low slope and is wide at low tide. For a view from above, see Slovinsky and Dickson (2011).

Coastal Geology

The sand beach is punctuated by resistant bedrock outcrops and tide pools.

Figure 6. A view looking southwest from Fort Foster Park toward Whaleback Light. Ripples in the beach sand are made by waves on a falling tide.

Directions

From US Route 1 in Kittery take Haley Road southeast 3 miles. Turn left onto Pepperrell Road. After 0.2 miles bear right and take Chauncey Creek Road 0.5 miles. Turn right on Gerrish Island Lane. Go a very short distance to cross the creek and then turn right onto Pocahontas Rd. Follow Pocahontas Rd about a mile to the park gatehouse.

For current information on hours of operation and fees, please visit the Town of Kittery's web pages: Fort Foster Park.

Figure 7. A vertical air photo of the lower Piscataqua River. Maine is on the upper right, New Hampshire is on the lower left. The Portsmouth Naval Shipyard is on Seavey Island on the top left of the photo. Fort Foster Park is on the lower right where the pier is visible.

References and Additional Information

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